

Figure 1: Comparison: vias before PER cleaning

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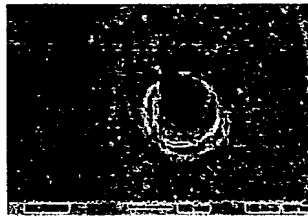
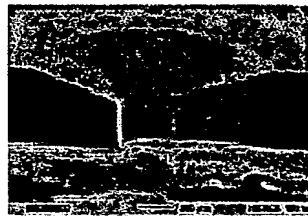


Figure 2: Tank unit, vias after cleaning for 5 min

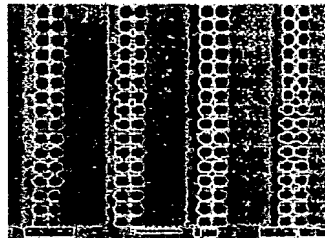
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Figure 3: Spray tool (Semitool SAT), vias after cleaning for 20 min

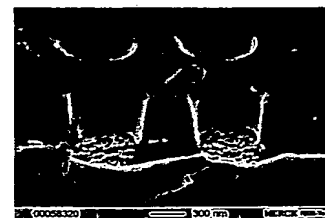
20



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Figure 4: Spray tool (Semitool SAT), Al/Cu 5 min, 45°C, with DSP

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Figure 5:

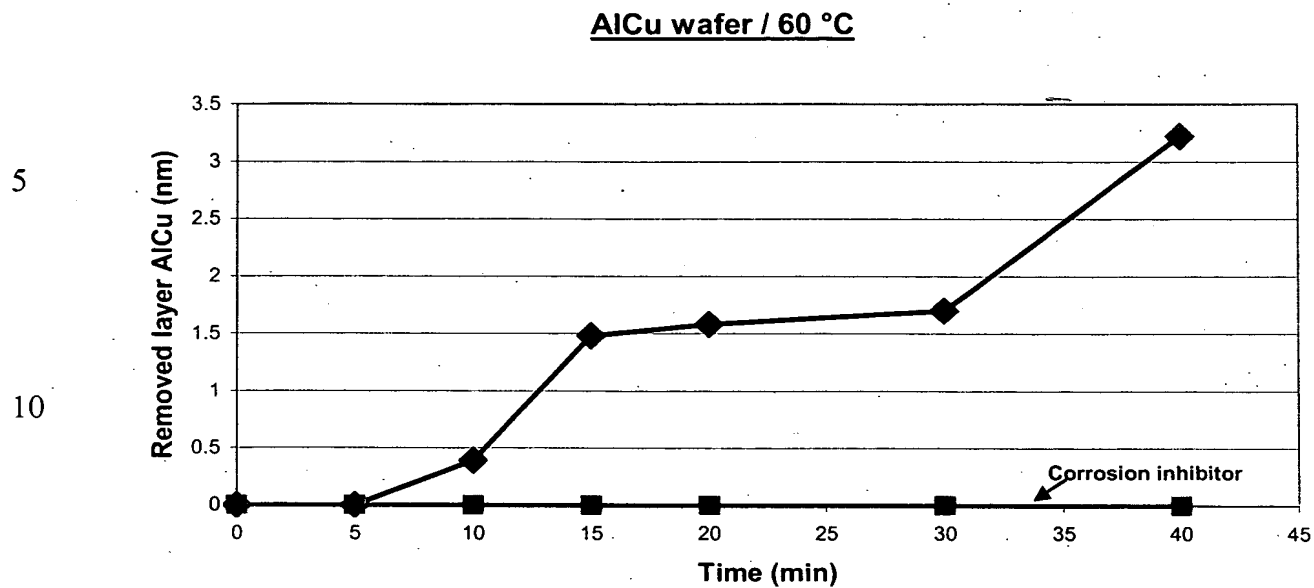
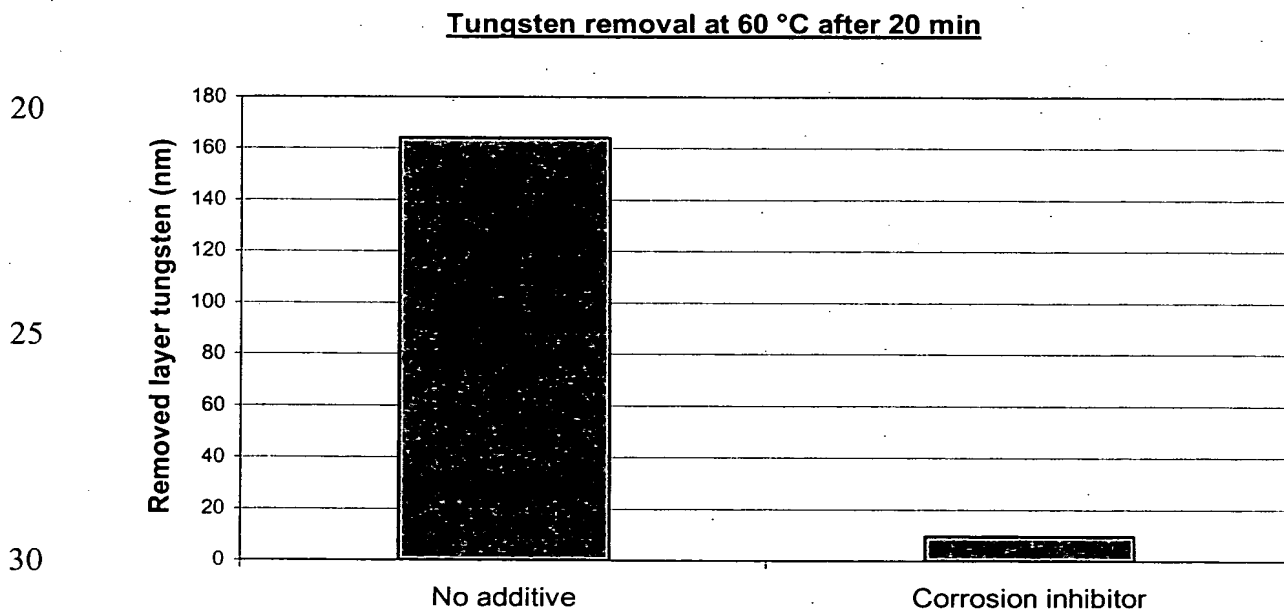


Figure 6:



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Figure 7: After cleaning for 20 min at 60°C with tartaric acid 5% / NMP 1% /
enanthic acid 1000 ppm

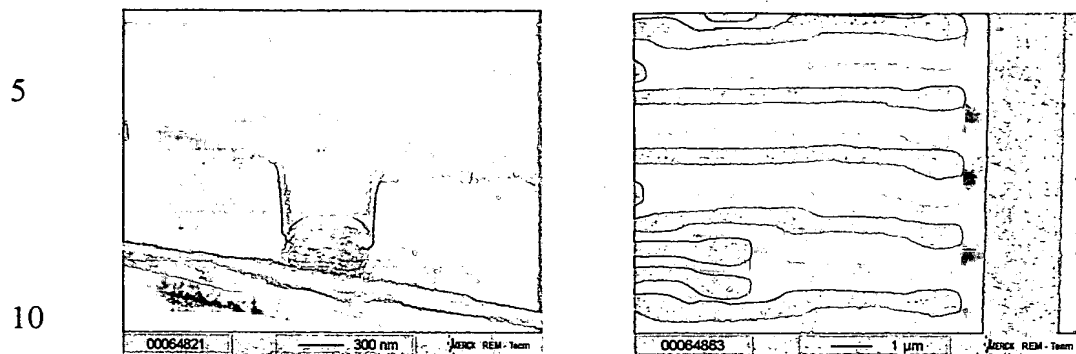


Figure 8: After cleaning for 20 min at 60°C with tartaric acid 5% / DMSO 1% /
enanthic acid 1000 ppm

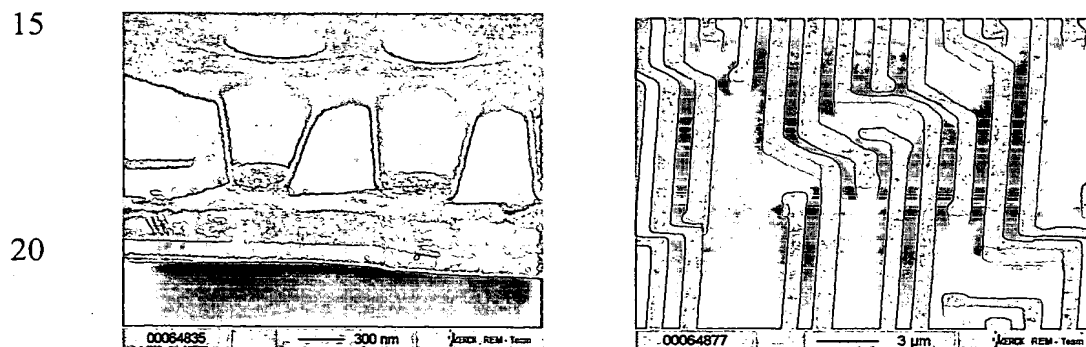
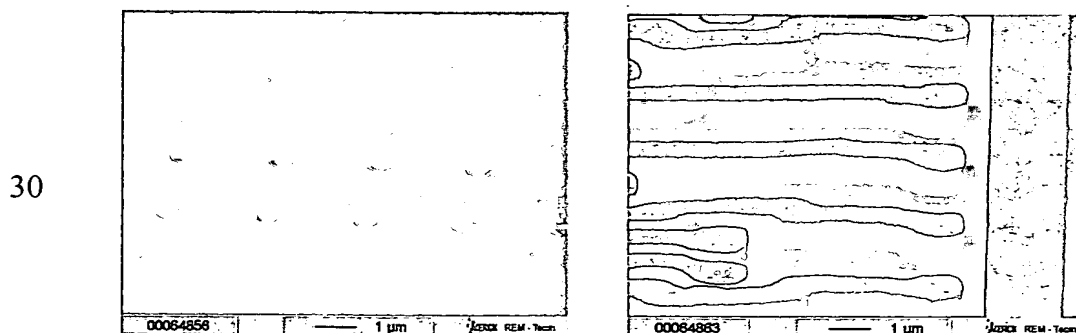


Figure 9: After cleaning for 20 min at 60°C with tartaric acid 5% / PGMEA 1% /
enanthic acid 1000 ppm



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Figure 10: After cleaning for 20 min at 60°C with maleic acid 5% / NMP 1% / enanthic acid 1000 ppm

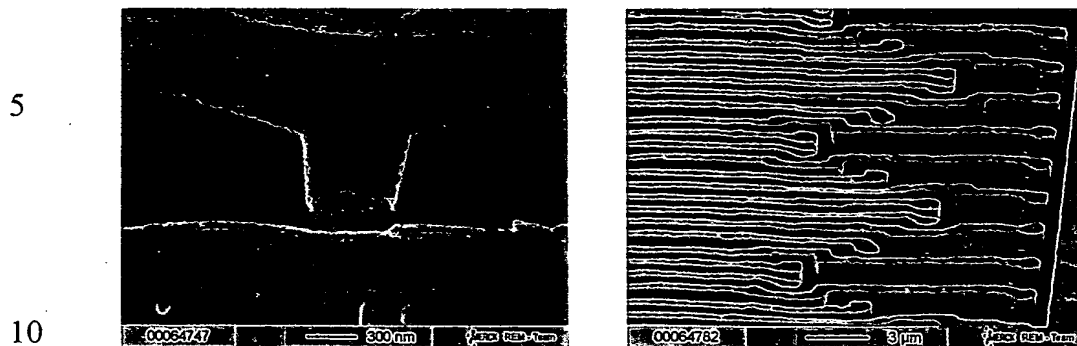


Figure 11: After cleaning for 20 min at 60°C with maleic acid 5% / DMSO 1% / enanthic acid 1000 ppm

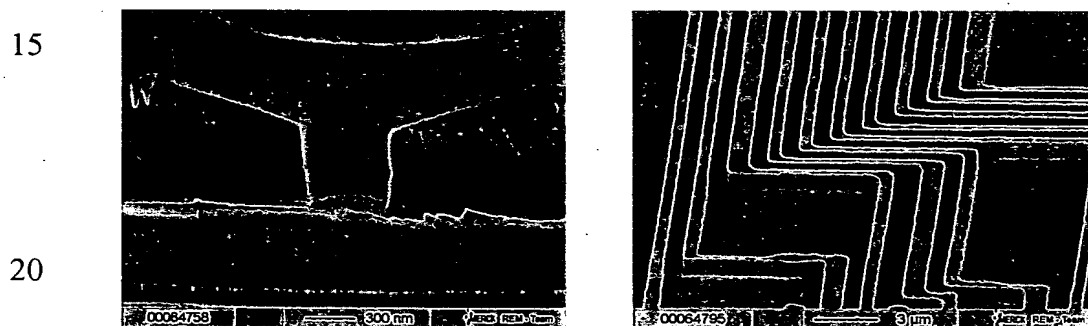


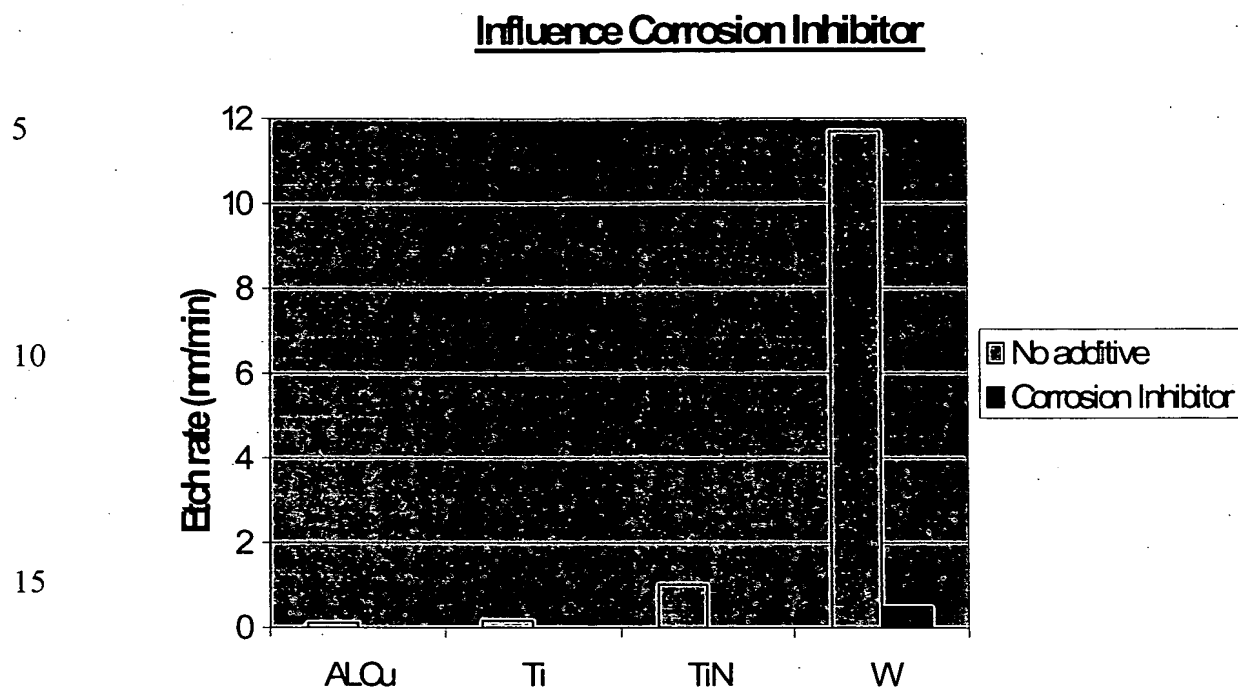
Figure 12: After cleaning for 20 min at 60°C with maleic acid 5% / PGMEA 1% / enanthic acid 1000 ppm



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Figure 13:



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